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OM protein - protein search, using SW model

Run on: March 7, 2005, 06:55:26 ; Search time 165.813 Seconds
(without alignments)
919.008 Million cell updates/sec

Title: US-09-939-537-29_COPY_1_394
Perfect score: 2029
Sequence: 1 MRRGVFRRHLVLVQLALP.....SGVLESNIKVLPTWSTPV 394

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 2105692 seqs, 386760381 residues
Total number of hits satisfying chosen parameters: 2105692

Minimum DB seq length: 0
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : A_Geneseq_16Dec04:*
1: geneseqp19806:*
2: geneseqp19909:*
3: geneseqp20008:*
4: geneseqp20018:*
5: geneseqp20028:*
6: geneseqp20038:*
7: geneseqp20038:*
8: geneseqp20048:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

| Result No. | Score | Query Match | Length | DB ID | Description |
|------------|-------|-------------|--------|-------|----------------------|
| 1 | 2029 | 100.0 | 398 | 2 | AAR89450 CD4 D1-D4 |
| 2 | 2029 | 100.0 | 458 | 3 | AAR807769 DNA encod. |
| 3 | 2029 | 100.0 | 452 | 2 | AAR72727 CD4:eta b |
| 4 | 2029 | 100.0 | 462 | 2 | AAR78677 T-cell re |
| 5 | 2029 | 100.0 | 462 | 2 | AAR89457 CD4:Fc re |
| 6 | 2029 | 100.0 | 462 | 2 | AAR02214 CD4:Fc re |
| 7 | 2029 | 100.0 | 462 | 2 | AAR63142 ChimERIC |
| 8 | 2029 | 100.0 | 532 | 2 | AAR72728 CD4:gamma |
| 9 | 2029 | 100.0 | 532 | 2 | AAR78678 T-cell re |
| 10 | 2029 | 100.0 | 532 | 2 | AAR89458 CD4:eta f |
| 11 | 2029 | 100.0 | 532 | 2 | AAR02215 CD4:T-cell |
| 12 | 2029 | 100.0 | 532 | 2 | AAR63141 ChimERIC |
| 13 | 2029 | 100.0 | 575 | 2 | AAR72726 CD4:zeta |
| 14 | 2029 | 100.0 | 575 | 2 | AAR78676 T-cell re |
| 15 | 2029 | 100.0 | 575 | 2 | AAR89456 CD4:zeta |
| 16 | 2029 | 100.0 | 575 | 2 | AAR02213 CD4:T-cell |
| 17 | 2029 | 100.0 | 575 | 2 | AAR63140 ChimERIC |
| 18 | 2029 | 100.0 | 630 | 7 | ADH54472 Human CD4 |
| 19 | 2026 | 99.9 | 398 | 2 | AAR78673 CD4 domai |
| 20 | 2023 | 99.9 | 416 | 3 | AAB19509 CD4-IGM f |
| 21 | 2023 | 99.7 | 436 | 3 | AAY51080 Human fus |
| 22 | 2023 | 99.7 | 474 | 3 | AAY51170 CD4-Ig fu |
| 23 | 2023 | 99.7 | 481 | 3 | AAB19510 CD4-IGM f |
| 24 | 2023 | 99.7 | 481 | 3 | AAY51171 CD4-Ig fu |
| 25 | 2023 | 99.7 | 616 | 3 | AAY51082 Human fus |

| | | | | | |
|----|------|------|------|---|--------------------|
| 26 | 2023 | 99.7 | 616 | 3 | AAY59172 CD4-Ig fu |
| 27 | 2023 | 99.7 | 631 | 1 | AAP93009 Genetic c |
| 28 | 2023 | 99.7 | 631 | 1 | AAB19508 CD4-IGG1 |
| 29 | 2023 | 99.7 | 631 | 3 | AAY51079 Human fus |
| 30 | 2023 | 99.7 | 631 | 3 | AAY59169 CD4-Ig fu |
| 31 | 2023 | 99.7 | 729 | 1 | AAP93008 Genetic c |
| 32 | 2023 | 99.7 | 729 | 3 | AAB19507 CD4-IGG1 |
| 33 | 2023 | 99.7 | 729 | 3 | AAY51078 Human fus |
| 34 | 2023 | 99.7 | 729 | 3 | AAY59168 CD4-Ig fu |
| 35 | 2021 | 99.6 | 400 | 2 | AAR06374 Truncated |
| 36 | 2021 | 99.6 | 458 | 1 | AAP81990 Clone p74 |
| 37 | 2021 | 99.6 | 458 | 1 | AAP91369 T4 protei |
| 38 | 2021 | 99.6 | 458 | 2 | AAY39826 Soluble h |
| 39 | 2021 | 99.6 | 2037 | 2 | AAR04032 Full leng |
| 40 | 2021 | 99.6 | 2050 | 2 | AAR07641 Deduced s |
| 41 | 2018 | 99.5 | 394 | 1 | AAP93506 Derived s |
| 42 | 2017 | 99.4 | 402 | 1 | AAP91922 Sequence |
| 43 | 2017 | 99.4 | 402 | 1 | AAP94757 Sequence |
| 44 | 2016 | 99.4 | 481 | 3 | AAY51081 Human fus |
| 45 | 2015 | 99.3 | 394 | 3 | AAY88328 T4 glycop |

ALIGNMENTS

RESULT 1
AAR89450
ID AAR89450 standard; peptide; 398 AA.
XX
AC AAR89450;
XX
DT 26-SEP-1996 (first entry)
XX
DE CD4 D1-D4 domains.
XX
XX CD7; transmembrane domain; chimeric receptor; CD5; CD34; CH2; CH3; IgG1;
XX human; CD4; HIV; proteinaceous alpha-helix; T cell; B cell; neutrophil;
XX dendritic cell; therapy; mammal; infection.
OS Homo sapiens.
XX
PN MO9603883-A1.
XX
PD 15-FEB-1996.
XX
PF 26-JUL-1995; 95WO-US009468.
XX
PR 02-AUG-1994; 94US-00284391.
PR 24-FEB-1995; 95US-00394388.
XX
PA (GENO) GEN HOSPITAL CORP.
XX
PI Seed B, Banapur B, Romeo C, Kolanus W;
XX
DR WPI; 1996-129034/13.
XX N-PSDB; AAT10797.
XX
PT Membrane-bound chimeric receptor comprising extracellular portion
XX including CD4 fragment - cells expressing receptor can be used for
XX treatment of HIV infection.
PS Example 10; Fig 23; 134p; English.
XX
XX This sequence represents the D1-D4 domains of CD4. This sequence is
XX included in the membrane bound proteinaceous chimeric receptor of the
XX invention. The extracellular portion of the chimeric receptor contains a
XX fragment of CD4 amino acids 1-194 or 1-200 of the CD4 sequence which
XX specifically recognizes and binds HIV-infected cells but does not
XX mediate HIV infection. The extracellular domain of the receptor is
XX separated from the cell membrane by 48 or 72 angstroms, or by one or more
XX proteinaceous alpha-helices. The transmembrane region of the chimeric
XX receptor contains a portion of the CD7, CD5 or CD34 transmembrane domain.
XX Alternatively, the extracellular portion of the receptor can also be

CC separated from the intracellular domain by the hinge, CH2 and CH3 domains
CC of human IgG1. The cells expressing the receptor are preferably T cells,
CC B cells, neutrophils, or dendritic cells. The therapeutic cells
CC expressing the chimeric receptor are administered to a mammal to treat
CC HIV infection
XX
SQ Sequence 398 AA;

Query Match 100.0%; Score 2029; DB 2; Length 398;
Best Local Similarity 100.0%; Pred. No. 2, 3e-135;
Matches 394; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MNRGVPRHLLVLTQALLPAATQGNKYVLGKKGDTVELCTASQKKSIOFHWKNSNOIK 60
DB 1 MNRGVPRHLLVLTQALLPAATQGNKYVLGKKGDTVELCTASQKKSIOFHWKNSNOIK 60
QY 61 ILGNQGSFLTKGPKSKLNDRADSRSLMDQGNPFLIKNLKIEDSDTYICEVEDQKEVOL 120
DB 61 ILGNQGSFLTKGPKSKLNDRADSRSLMDQGNPFLIKNLKIEDSDTYICEVEDQKEVOL 120
QY 121 LVFGLTANSDTHLLQGOSLTLTLESPPGSSPSVQCRSPRGKNIQGGKTLVSQLELDQSG 180
DB 121 LVFGLTANSDTHLLQGOSLTLTLESPPGSSPSVQCRSPRGKNIQGGKTLVSQLELDQSG 180
QY 181 TWTCVTLQONOKKVEFKIDIVVLAFOKASSIVYKKEGEVFSFPLAFTVEKLTGSGELMW 240
DB 181 TWTCVTLQONOKKVEFKIDIVVLAFOKASSIVYKKEGEVFSFPLAFTVEKLTGSGELMW 240
QY 241 QAERASSSKSWITFDLKNKEVSVKRVTDPKLQNGKPLHLTLPLQALPOYAGSGNLTLLA 300
DB 241 QAERASSSKSWITFDLKNKEVSVKRVTDPKLQNGKPLHLTLPLQALPOYAGSGNLTLLA 300
QY 301 LEAKTGKLGHEVNLVVMRAATQKNIJCEVWGPTSPKMLSLKLENKEAKVSKREKPVWV 360
DB 301 LEAKTGKLGHEVNLVVMRAATQKNIJCEVWGPTSPKMLSLKLENKEAKVSKREKPVWV 360
QY 361 LNPEAGMWQCLLSDSGQVLLSNIKVLPTWSTPV 394
DB 361 LNPEAGMWQCLLSDSGQVLLSNIKVLPTWSTPV 394

RESULT 2

AAB07769 standard; protein; 458 AA.

AA07769;

07-NOV-2000 (first entry)

XX DNA encoding a human T4 glycoprotein.

XX Human; T4 glycoprotein; human immunodeficiency virus; HIV;
XX envelope glycoprotein; AIDS; virus binding.

OS Homo sapiens.

XX Key Location/Qualifiers

XX Peptide 1..23

XX Modified-site /note="leader sequence" 296..298

XX Modified-site /note="N-linked glycosylation site" 325..327

XX Modified-site /note="N-linked glycosylation site" 398..420

XX Domain /note="transmembrane domain" 421..458

XX Domain /note="cytoplasmic domain"

XX US6093539-A.

XX 25-JUL-2000.

XX 06-JUN-1995;

XX 95US-00466368.

XX 21-AUG-1986; 86US-00898587.
PR 11-JUN-1991; 91US-00713564.
PR 06-JUL-1992; 92US-00909021.
PR 12-DEC-1994; 94US-00354452.
XX
XX (UYCO) UNIV COLUMBIA NEW YORK.

PI Madden PU, Chess L, Axel R, Weiss R, McDougal JS, Littman DR;
XX WPI, 2000-505203/45.
DR N-PSDB; AAA59352.

PT New isolated nucleic acid encoding a human T cell surface protein and the
PT soluble surface T4 glycoprotein that it encodes, useful as prophylaxis
PT for treating a subject infected with human acquired immune deficiency
PT syndrome virus.

PS Disclosure; Fig 6A-B; 69p; English.

XX The present sequence represents a human T4 glycoprotein. An aqueous-
CC soluble polypeptide comprising a portion of a human T4 glycoprotein
CC specifically forms a complex with a human immunodeficiency virus (HIV) .
CC envelope glycoprotein. The DNA is useful for producing the soluble
CC surface T4 glycoprotein. The soluble surface T4 glycoprotein is useful as
CC a therapeutic agent, i.e. as prophylaxis for treating a subject infected
CC with an HIV virus. Thus, the soluble T4 glycoprotein is useful for
CC treating human AIDS. The soluble T4 glycoprotein is also useful in
CC diagnostic or screening assays, e.g. for screening inhibitors of virus
CC binding, or for detecting and quantitating T4, T4+ cells and antibodies
CC to T4, which are of diagnostic value for AIDS
XX

SQ Sequence 458 AA;

Query Match 100.0%; Score 2029; DB 3; Length 458;
Best Local Similarity 100.0%; Pred. No. 2, 7e-135;
Matches 394; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MNRGVPRHLLVLTQALLPAATQGNKYVLGKKGDTVELCTASQKKSIOFHWKNSNOIK 60
DB 1 MNRGVPRHLLVLTQALLPAATQGNKYVLGKKGDTVELCTASQKKSIOFHWKNSNOIK 60
QY 61 ILGNQGSFLTKGPKSKLNDRADSRSLMDQGNPFLIKNLKIEDSDTYICEVEDQKEVOL 120
DB 61 ILGNQGSFLTKGPKSKLNDRADSRSLMDQGNPFLIKNLKIEDSDTYICEVEDQKEVOL 120
QY 121 LVFGLTANSDTHLLQGOSLTLTLESPPGSSPSVQCRSPRGKNIQGGKTLVSQLELDQSG 180
DB 121 LVFGLTANSDTHLLQGOSLTLTLESPPGSSPSVQCRSPRGKNIQGGKTLVSQLELDQSG 180
QY 181 TWTCVTLQONOKKVEFKIDIVVLAFOKASSIVYKKEGEVFSFPLAFTVEKLTGSGELMW 240
DB 181 TWTCVTLQONOKKVEFKIDIVVLAFOKASSIVYKKEGEVFSFPLAFTVEKLTGSGELMW 240
QY 241 QAERASSSKSWITFDLKNKEVSVKRVTDPKLQNGKPLHLTLPLQALPOYAGSGNLTLLA 300
DB 241 QAERASSSKSWITFDLKNKEVSVKRVTDPKLQNGKPLHLTLPLQALPOYAGSGNLTLLA 300
QY 301 LEAKTGKLGHEVNLVVMRAATQKNIJCEVWGPTSPKMLSLKLENKEAKVSKREKPVWV 360
DB 301 LEAKTGKLGHEVNLVVMRAATQKNIJCEVWGPTSPKMLSLKLENKEAKVSKREKPVWV 360
QY 361 LNPEAGMWQCLLSDSGQVLLSNIKVLPTWSTPV 394
DB 361 LNPEAGMWQCLLSDSGQVLLSNIKVLPTWSTPV 394

RESULT 3

AAR27277

ID AAR27277 standard; protein; 462 AA.

XX AAR27277;

| | | |
|---------------------------|---|---|
| DT | 25-MAR-2003 | (revised) |
| DT | 28-JUL-1995 | (first entry) |
| XX | | |
| DE | CD4:eta peptide chimeric protein. | |
| XX | | |
| KW | Fusion protein; CD4; extracellular domain; zeta; eta; gamma; | |
| KV | membrane spanning domain; intracellular domain; type I; | |
| KW | integral membrane homodimer; TCR; T cell antigen receptor; | |
| KM | extracellular domain; mouse; human; receptor; chimera; | |
| KX | HPB-ALL tumour cell line; natural killer cell. | |
| OS | Homo sapiens. | |
| XX | | |
| FH | Key | Location/Qualifiers |
| FT | Protein | 1..399 |
| FT | Protein | /note="CD4 extracellular domain" |
| FT | Protein | 400..462 |
| PN | MO9215322-AL | /note="Zeta membrane spanning and intracellular domain" |
| PD | 17-SEP-1992 | |
| PF | 06-MAR-1992; | 92WO-US001785. |
| PR | 07-MAR-1991; | 91US-00665961. |
| PA | (GEHO) GEN HOSPITAL CORP. | |
| PI | Seed B, Romeo C, Kolanus W; | |
| DR | N-PSDB; AAQ28705. | |
| DR | NPJ; 1992-331474/40. | |
| PT | Theapeutic cells expressing chimeric receptors - directing cellular response to an infective agent; useful in treating HIV-1, AIDS Pneumocystis carinii infections etc. | |
| XX | Example 2; Page 73-74; 11app; English. | |
| XX | This sequence represents a fusion protein between the CD4 extracellular domain and the eta protein membrane spanning domain and intracellular domain. Eta is an isoform of zeta (see also AAR27276) which is a 32 kD type I integral membrane homodimer, which arises by alternate mRNA splicing. It is present in reduced amounts in cells expressing the T cell antigen receptor. Zeta-eta heterodimers are thought to mediate the death called apoptosis. In the production of the CD4 receptor chimera, the eta cDNA was isolated from the HPB-ALL tumour cell line and from human natural killer cells. The eta cDNA was joined to the extracellular domain of an engineered form of CD4 possessing a BamHI site just upstream of the membrane spanning domain, by a BamHI site naturally present a few residues upstream of the membrane spanning domain. (Updated on 25-MAR-2003 to correct PN field.) | |
| SQ | Sequence 462 AA; | |
| Query Match | 100.0%; Score 2029; DB 2; Length 462; | |
| Best Local Similarity | 100.0%; Pred. No. 2,86-135; | |
| Matches 394; Conservative | 100.0%; Mismatches 0; Indels 0; Gaps | |
| Dy | 1 MNRGVPFHLTLVTOTALLPATQGNKVVLLGKKGPDTVELTCTASQSKSIOPFMKNNOIK 60 | |
| Dy | 1 MNRGVPFHLTLVTOTALLPATQGNKVVLLGKKGPDTVELTCTASQSKSIOPFMKNNOIK 60 | |
| Dy | 61 ILNGNQSFLTKGPSKLNDRADSRSLMDQGNFLLIKNLIKIBSDTYICEVDQKEEYQL 120 | |
| Dy | 61 ILNGNQSFLTKGPSKLNDRADSRSLMDQGNFLLIKNLIKIBSDTYICEVDQKEEYQL 120 | |
| Dy | 121 LVFGITANSDFHLTGQSGLTTLTLESPSSPEVCGRSPRGNKIQQAGKTLSVSQLELQDSG 180 | |
| Dy | 121 LVFGITANSDFHLTGQSGLTTLTLESPSSPEVCGRSPRGNKIQQAGKTLSVSQLELQDSG 180 | |

| QY | 181 | IWTCIVLONOKKVEKIDIVLAFPKASIVYKKEGEVSEFPPLAFVTEKLTGSGELMW | 240 |
|----------|---|--|-----|
| DB | +181 | TWTCIVLONOKKVEKIDIVLAFPKASIVYKKEGEVSEFPPLAFVTEKLTGSGELMW | 240 |
| QY | 241 | QAEKASSSKSWITTPDLKNKEVSVKAVTODPKLQMGKULPLHLTLPLQALPOVAGSGLTLA | 300 |
| DB | 241 | QAEKASSSKSWITTPDLKNKEVSVKAVTODPKLQMGKULPLHLTLPLQALPOVAGSGLTLA | 300 |
| QY | 301 | LEATGKGLHOEVNVLVWFRATOLQKULTEVWGPTSPKMLSLKLENKANVSKREKPVW | 360 |
| DB | 301 | LEATGKGLHOEVNVLVWFRATOLQKULTEVWGPTSPKMLSLKLENKANVSKREKPVW | 360 |
| QY | 361 | LNPEAGMWQCLLSDSGOVLLESNTIKVLFTWSPV | 394 |
| DB | 361 | LNPEAGMWQCLLSDSGOVLLESNTIKVLFTWSPV | 394 |
| RESULT 4 | | | |
| AA78677 | ID | AA78677 standard; protein; 462 AA. | |
| AA78677 | AC | AA78677; | |
| XX | DT | 16-APR-1996 (first entry) | |
| XX | DE | T-cell receptor gamma. | |
| XX | KW | Chimeric receptor; CD4, T-cell receptor gamma; HIV, cytolysis; | |
| XX | KW | human immunodeficiency virus; adoptive immunotherapy. | |
| XX | OS | Homo sapiens. | |
| XX | PN | W09521528-A1. | |
| XX | PD | 17-AUG-1995. | |
| XX | PF | 12-JAN-1995; 95WO-US000454. | |
| XX | PR | 14-FEB-1994; 94US-00195395. | |
| XX | PR | 02-AUG-1994; 94US-00284391. | |
| XX | PA | (GENO) GEN HOSPITAL CORP. | |
| PI | Seed B, Banapour B, Romeo C, Kolanus W; | | |
| XX | WI, 1995-292893/38. | | |
| DR | P-PSDB; AAQ96123. | | |
| XX | Target cytolysis of HIV-infected cells - by chimeric CD4 receptor-bearing | | |
| PT | cells. | | |
| XX | Example 2: Page 77-78, 118pp; English. | | |
| PS | Fusion proteins comprising the extracellular domain of CD4 fused to T- | | |
| XX | cell receptor zeta, gamma or eta (AA78676-78, respectively) were" | | |
| CC | expressed in CV1 using a vaccine virus vector. These CD4,zeta, CD4,gamma | | |
| CC | and CD4:eta chimeric receptors mediated cytolysis of targets expressing | | |
| CC | HIV gp120/41 | | |
| XX | Sequence 462 AA; | | |
| XX | Query Match | 100.0%; Score 2029; DB 2; Length 462; | |
| XX | Best Local Similarity | 100.0%; Pred. NO. 2.8e-135; Indels 0; Gaps 0 | |
| XX | Matches 394; Conservative 0; Mismatches 0; Indels 0; Gaps 0 | | |
| QY | 1 | MNRGVPFRHLILVQLALLPATQGNKVLGKKGDVLELTCTASQKSIQIFWKNNSNQIX | 60 |
| DB | 1 | MNRGVPFRHLILVQLALLPATQGNKVLGKKGDVLELTCTASQKSIQIFWKNNSNQIX | 60 |
| QY | 61 | ILNGQGSFLTGTGPKLNDRADSRSLMDQGNFPLIKNLKTEDSTYICEVEDQKEEVOL | 120 |
| DB | 61 | ILNGQGSFLTGTGPKLNDRADSRSLMDQGNFPLIKNLKTEDSTYICEVEDQKEEVOL | 120 |

QY 121 LVFGLTANSDFTHLQGSITLTLESPPGSSPSVQCRSPRGKNIQGGKTLVSQLELQDSG 180
 DB 121 LVFGLTANSDFTHLQGSITLTLESPPGSSPSVQCRSPRGKNIQGGKTLVSQLELQDSG 180
 QY 181 TWTCTVLQNKQKVERKIDIVLAFOKASSIVYKKEGEVFEFPLAFTVEKLTGSGELMW 240
 DB 181 TWTCTVLQNKQKVERKIDIVLAFOKASSIVYKKEGEVFEFPLAFTVEKLTGSGELMW 240
 QY 241 QAEKRGKLGHOEVNLVVMRATOLQKNLTCEVWGPTSPKMLSLKENKAKVSKREKPVWV 360
 DB 241 QAEKRGKLGHOEVNLVVMRATOLQKNLTCEVWGPTSPKMLSLKENKAKVSKREKPVWV 360
 QY 301 LEAKTGKLGHOEVNLVVMRATOLQKNLTCEVWGPTSPKMLSLKENKAKVSKREKPVWV 360
 DB 301 LEAKTGKLGHOEVNLVVMRATOLQKNLTCEVWGPTSPKMLSLKENKAKVSKREKPVWV 360
 QY 361 LNPEAGMWCCLSDSGQVLLBSNIKVLPWTSTPV 394
 DB 361 LNPEAGMWCCLSDSGQVLLBSNIKVLPWTSTPV 394
 RESULT 5
 AAR89457
 ID AAR89457 standard; protein; 462 AA.
 XX
 AC AAR89457;
 AC
 DT 26-SEP-1996 (first entry)
 DE
 DE CD4:gamma fusion protein.
 DE
 XX CD7; transmembrane domain; chimeric receptor; CD5; CD34; CH2; CH3; IGd1;
 KM human; CD4; HIV; proteinaceous alpha-helix; T cell; B cell; neutrophil;
 KM dendritic cell; therapy; mammal; infection.
 XX
 OS Synthetic.
 OS
 XX MO9603883-A1.
 PN
 XX 15-FEB-1996.
 PD
 XX 26-JUL-1995; 95WO-US009468.
 PF
 XX 02-AUG-1994; 94US-00284391.
 PR 24-FEB-1995; 95US-00394388.
 PR
 XX (GENO) GEN HOSPITAL CORP.
 PA
 XX Seed B, Banapur B, Romeo C, Kolanus W;
 PI WPI; 1996-129034/13.
 DR N-PSDB; AAT10802.
 XX
 XX Membrane-bound chimeric receptor comprising extracellular portion
 PT including CD4 fragment - cells expressing receptor can be used for
 PT treatment of HIV infection.
 PT
 XX Example 2; Page 79; 134p; English.
 PS
 XX AAT10801-T10803 represent membrane bound proteinaceous chimeric receptors
 CC of the invention. This sequence represents the CD4:gamma chimera. The
 CC transmembrane region of the chimeric receptor acts to separate the
 CC intracellular and extracellular domains of the chimera, and contains a
 CC portion of the CD7 (see AAR89440), CD5 or CD34 transmembrane domains.
 CC Alternatively, the extracellular portion of the receptor can be separated
 CC from the intracellular domain by the hinge, CH2 and CH3 domains of human
 CC IGd1 (see AAR89441). The extracellular portion of the chimeric receptor
 CC contains a fragment of CD4 (amino acids 1-394 or 1-200 of the CD4
 CC sequence, see AAR89450 and AAR89451) which specifically recognizes and
 CC binds HIV-infected cells, but does not mediate HIV infection. The
 CC extracellular domain of the receptor is separated from the cell membrane
 CC by 48 or 72 angstroms, or by one or more proteinaceous alpha-helices. The
 CC cells expressing the receptor are preferably T cells, B cells,

CC neutrophils, or dendritic cells. The therapeutic cells expressing the
 CC chimeric receptor are administered to a mammal to treat HIV infection
 XX
 SQ Sequence 462 AA;
 Query Match 100.0%; Score 2029; DB 2; Length 462;
 Best Local Similarity 100.0%; Pred. No. 2,86-135;
 Matches 394; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 MNRGVPFRHLIVLQALIPATQGNKVVLGKGGDTVELTCTASQKKSIOFHKNSNOIK 60
 DB 1 MNRGVPFRHLIVLQALIPATQGNKVVLGKGGDTVELTCTASQKKSIOFHKNSNOIK 60
 QY 61 ILGNQSFITKGPSKLNBRADRSRLIMQGNPPLIIKLIKIDSDPTICEVEDQKEEYVL 120
 DB 61 ILGNQSFITKGPSKLNBRADRSRLIMQGNPPLIIKLIKIDSDPTICEVEDQKEEYVL 120
 QY 121 LVFGLTANSDFTHLQGSITLTLESPPGSSPSVQCRSPRGKNIQGGKTLVSQLELQDSG 180
 DB 121 LVFGLTANSDFTHLQGSITLTLESPPGSSPSVQCRSPRGKNIQGGKTLVSQLELQDSG 180
 QY 181 TWTCTVLQNKQKVERKIDIVLAFOKASSIVYKKEGEVFEFPLAFTVEKLTGSGELMW 240
 DB 181 TWTCTVLQNKQKVERKIDIVLAFOKASSIVYKKEGEVFEFPLAFTVEKLTGSGELMW 240
 QY 241 QAEKRGKLGHOEVNLVVMRATOLQKNLTCEVWGPTSPKMLSLKENKAKVSKREKPVWV 360
 DB 241 QAEKRGKLGHOEVNLVVMRATOLQKNLTCEVWGPTSPKMLSLKENKAKVSKREKPVWV 360
 QY 301 LEAKTGKLGHOEVNLVVMRATOLQKNLTCEVWGPTSPKMLSLKENKAKVSKREKPVWV 360
 DB 301 LEAKTGKLGHOEVNLVVMRATOLQKNLTCEVWGPTSPKMLSLKENKAKVSKREKPVWV 360
 QY 361 LNPEAGMWCCLSDSGQVLLBSNIKVLPWTSTPV 394
 DB 361 LNPEAGMWCCLSDSGQVLLBSNIKVLPWTSTPV 394
 RESULT 6
 AAM02214
 ID AAM02214 standard; protein; 462 AA.
 XX
 AC AAM02214;
 AC
 DT 11-NOV-1996 (first entry)
 DE
 DE CD4:Fc receptor gamma chain chimaeric receptor.
 DE
 XX Chimaeric receptor; cellular immunity; adoptive immunotherapy; CD4;
 KM human immunodeficiency virus type 1; HIV-1; AIDS; therapy;
 KM Fc receptor gamma chain; cytotoxic T lymphocyte; CTL.
 XX
 OS Homo sapiens.
 OS
 FH Key
 FT Domain
 FT
 FT Region
 FT
 FT Region
 FT
 FT Domain
 PN MO9625953-A1.
 PD 29-AUG-1996.
 XX
 Location/Qualifiers
 1..393
 /label= "Extracellular domain"
 /note= "CD4 extracellular domain"
 394..397
 /label= "Linker"
 /note= "encoding DNA contains a BamHI site used for
 fusion construction"
 398..462
 /note= "region of fusion derived from gamma chain,
 preferred signal-transducing portions for constructs of
 the invention are amino acids 421-462 and 402-419"
 400..462
 /label= "Transmembrane+Intracellular_domains"

PF 25-JAN-1996; 96MO-US001056.
 XX
 PR 24-FEB-1995; 95US-00394176.
 XX
 PA (GEHO) GEN HOSPITAL CORP.
 XX
 PI Seed B, Romeo C, Kolanus W;
 XX
 DR MPI: 1996-402134/40.
 DR N-PSDB; AAT36759.
 XX
 PT Direction of cellular immune response using therapeutic cell expressing 2
 PT chimeric receptors - comprising region binding to target cell and region
 PT that signals target cell destruction, or CD28 region, partic. for
 PT eliminating HIV-infected cells.
 XX
 PS Claim 7; Page 76; 120pp; English.
 XX
 CC A chimeric receptor (AAW00214) comprises the extracellular domain of an
 CC engineered form of the CD4 cellular receptor for HIV and the
 CC transmembrane and intracellular regions, including the cytoplasmic signal-
 CC transducing portion, of the human Fc receptor gamma chain; the region of
 CC the fusion is shown in AAW02223. It can be obtd. by inserting a gene
 CC fusion (AAT36759) into a vaccinia virus vector and expression in host
 CC cells. Chimeric receptors comprising CD4 fused to Fc receptor gamma or T
 CC -cell receptor zeta (see also AAW02213) or eta (AAW02215) chains are
 CC capable of directing cytotoxic T lymphocytes to specifically recognise
 CC and kill cells expressing HIV gp120, thus providing a therapy for AIDS
 CC
 XX
 SQ Sequence 462 AA;
 Query Match 100.0%; Score 2029; DB 2; Length 462;
 Best Local Similarity 100.0%; Pred. No. 2.8e-135; Indels 0; Gaps 0;
 Matches 394; Conservative 0; Mismatches 0;
 QY 1 MNKGVPFRHLVLTQALPAATQGNKVVLGKKGDTVELTCTASOKKSIOFHKNSNQIK 60
 DB 1 MNKGVPFRHLVLTQALPAATQGNKVVLGKKGDTVELTCTASOKKSIOFHKNSNQIK 60
 QY 61 ILGNQSSFLTGPSSKLNDRADSRSLMDQGNPFLIIKNLKIEDSDTYICEVEBQKEVQL 120
 DB 61 ILGNQSSFLTGPSSKLNDRADSRSLMDQGNPFLIIKNLKIEDSDTYICEVEBQKEVQL 120
 QY 121 LVFGLTANSDTHLQOSLTLTLESPGSSPSVQCSPPRGKNIQGGKTLSVSLLEIDSG 180
 DB 121 LVFGLTANSDTHLQOSLTLTLESPGSSPSVQCSPPRGKNIQGGKTLSVSLLEIDSG 180
 QY 181 TWTCTVLQONOKVEFKIDIVVLAFOKASSIVYKKEGEQVFSFPLAFTVEKLTGSGELMW 240
 DB 181 TWTCTVLQONOKVEFKIDIVVLAFOKASSIVYKKEGEQVFSFPLAFTVEKLTGSGELMW 240
 QY 241 QARASSSSKSWITFDLKNKEVSVKRVYQDPKLGKGLPLHLTLPLQALPOLYAGSGNLTLLA 300
 DB 241 QARASSSSKSWITFDLKNKEVSVKRVYQDPKLGKGLPLHLTLPLQALPOLYAGSGNLTLLA 300
 QY 301 LEAKTGLHQBQVNLVVMRATQLOKNIITCEVWGPTSPKMLSLKLENKEAVSRRKRPVWY 360
 DB 301 LEAKTGLHQBQVNLVVMRATQLOKNIITCEVWGPTSPKMLSLKLENKEAVSRRKRPVWY 360
 QY 361 LNPEAGMOCILSDSGOVLLESNIKVLPTWSTPV 394
 DB 361 LNPEAGMOCILSDSGOVLLESNIKVLPTWSTPV 394
 RESULT 7
 AAW83142
 ID AAW83142 standard; protein; 462 AA.
 XX
 AC AAW83142;
 XX
 DT 03-FEB-1999 (first entry)
 XX
 DE Chimeric receptor containing mouse gamma polypeptide.

XX
 KM Human; zeta; eta; gamma; membrane-bound chimeric receptor; infection;
 KM tumour; cancer cell; autoimmune-generated cell; T cell receptor; CD3;
 KM CD4; B cell receptor; Fc receptor; pathogen; bacterial; fungal;
 XX
 XX protozoan; viral.
 XX
 OS Synthetic.
 OS Mus sp.
 XX
 PN US5843728-A.
 XX
 PD 01-DEC-1998.
 XX
 PF 05-APR-1995; 95US-00417495.
 XX
 PR 07-MAR-1991; 91US-00665961.
 PR 06-MAR-1992; 92US-00847566.
 PR 28-FEB-1994; 94US-00203866.
 XX
 PA (GEHO) GEN HOSPITAL CORP.
 XX
 PI Romeo C, Kolanus W, Seed B;
 XX
 DR MPI: 1996-044582/04.
 DR N-PSDB; AAV70158.
 XX
 PT Membrane-bound chimeric receptors - comprising extracellular portion
 PT which recognises and binds a target cell and an intracellular portion of
 PT e.g. a T-cell receptor.
 XX
 PS Example 2; Col 43-46; 57pp; English.
 XX
 CC The present invention describes DNA encoding a membrane-bound chimeric
 CC receptor comprising: (a) an extracellular portion that specifically
 CC recognises and binds a target cell or a target infective agent; and (b)
 CC an intracellular portion of a T-cell receptor CD3, zeta or eta
 CC polypeptide, a B-cell receptor polypeptide or an Fc receptor polypeptide.
 CC The present sequence represents a chimeric receptor containing the mouse
 CC gamma polypeptide. Cells expressing chimeric receptors of the present
 CC invention can be administered to mammals in order to destroy pathogens
 CC (e.g. bacteria, fungi, protozoa or viruses, especially HIV), cancer cells
 CC or autoimmune-generated cells
 CC
 XX
 SQ Sequence 462 AA;
 Query Match 100.0%; Score 2029; DB 2; Length 462;
 Best Local Similarity 100.0%; Pred. No. 2.8e-135; Indels 0; Gaps 0;
 Matches 394; Conservative 0; Mismatches 0;
 QY 1 MNKGVPFRHLVLTQALPAATQGNKVVLGKKGDTVELTCTASOKKSIOFHKNSNQIK 60
 DB 1 MNKGVPFRHLVLTQALPAATQGNKVVLGKKGDTVELTCTASOKKSIOFHKNSNQIK 60
 QY 61 ILGNQSSFLTGPSSKLNDRADSRSLMDQGNPFLIIKNLKIEDSDTYICEVEBQKEVQL 120
 DB 61 ILGNQSSFLTGPSSKLNDRADSRSLMDQGNPFLIIKNLKIEDSDTYICEVEBQKEVQL 120
 QY 121 LVFGLTANSDTHLQOSLTLTLESPGSSPSVQCSPPRGKNIQGGKTLSVSLLEIDSG 180
 DB 121 LVFGLTANSDTHLQOSLTLTLESPGSSPSVQCSPPRGKNIQGGKTLSVSLLEIDSG 180
 QY 181 TWTCTVLQONOKVEFKIDIVVLAFOKASSIVYKKEGEQVFSFPLAFTVEKLTGSGELMW 240
 DB 181 TWTCTVLQONOKVEFKIDIVVLAFOKASSIVYKKEGEQVFSFPLAFTVEKLTGSGELMW 240
 QY 241 QARASSSSKSWITFDLKNKEVSVKRVYQDPKLGKGLPLHLTLPLQALPOLYAGSGNLTLLA 300
 DB 241 QARASSSSKSWITFDLKNKEVSVKRVYQDPKLGKGLPLHLTLPLQALPOLYAGSGNLTLLA 300
 QY 301 LEAKTGLHQBQVNLVVMRATQLOKNIITCEVWGPTSPKMLSLKLENKEAVSRRKRPVWY 360
 DB 301 LEAKTGLHQBQVNLVVMRATQLOKNIITCEVWGPTSPKMLSLKLENKEAVSRRKRPVWY 360

```

QY      361  LNPEAGMOCILSDSGVILLSENIKVLPTWSTPY 394
        |||
        |||
        |||
Db      361  LNPEAGMOCILSDSGVILLSENIKVLPTWSTPY 394

RESULT 8
AAR27278
ID      AAR27278 standard; protein; 532 AA.
XX
XX      AAR27278;
AC
XX      25-MAR-2003 (revised)
DT      28-JUL-1995 (first entry)
XX
XX      CD4:gamma peptide chimeric protein.
DE
XX      Fusion protein; CD4; extracellular domain; zeta; eta; gamma;
KW      membrane spanning domain; intracellular domain; type I;
KW      integral membrane homodimer; TCR; T cell antigen receptor;
KW      extracellular domain; mouse; human; receptor; chimera;
KW      HPB-ALT tumour cell line; natural killer cell.
XX
XX      Homo sapiens.
OS
XX      WO9215322-A1.
XX      17-SEP-1992.
PD
XX      06-MAR-1992; 92WO-US001785.
PF
XX      07-MAR-1991; 91US-00665961.
PR
XX      (GENO ) GEN HOSPITAL CORP.
XX
XX      Seed B, Romeo C, Kolanus W;
PI
XX      MPI, 1992-331474/40.
XX      N-P8DB; AAO28706.
DR
XX
XX      Therapeutic cells expressing chimeric receptors - directing cellular
PT      response to an infective agent, useful in treating HIV-1, AIDS
PT      Pneumocystis carinii infections etc.
XX
XX      Example 2; Page 74-76; 114pp; English.
XX
XX      This sequence represents a fusion protein between the CD4 extracellular
CC      domain and the gamma protein membrane spanning domain and intracellular
CC      domain. The Fc-receptor-associated gamma chain is expressed in cell
CC      surface complexes with additional polypeptides, some of which mediate
CC      ligand recognition, and others which have undefined function. Gamma bears
CC      a homodimeric structure and overall organisation very similar to that of
CC      zeta (see also AAO28704), and is a component of both the mast
CC      cell/basophil high affinity IgE receptor, Fc-epsilon-RI, which consists
CC      of at least three distinct polypeptide chains and one of the low affinity
CC      receptors for IgE, represented in mice by Fc-gamma-RII-alpha. In the
CC      production of the CD4 receptor chimera, the gamma cDNA was isolated from
CC      the HPB-ALT tumour cell line and from human natural killer cells. The
CC      gamma cDNA was joined to the extracellular domain by engineering a BamHI
CC      site just upstream of the membrane spanning domain, by a BamHI site
CC      naturally present a few residues upstream of the membrane spanning
CC      domain. (Updated on 25-MAR-2003 to correct PN field.)
XX
XX      Sequence 532 AA;
SQ

Query Match      100.0%; Score 2029; DB 2; Length 532;
Best Local Similarity 100.0%; Pred. No. 3.3e-135;
Matches 394; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1  MNRGVPRFHLLLVLTQALLPATQGNKVVLDKKGDTYVLTCTASQKSIQFHMKNSNOIK 60
Db      1  MNRGVPRFHLLLVLTQALLPATQGNKVVLDKKGDTYVLTCTASQKSIQFHMKNSNOIK 60
        61  ILNQGSFLLTKGPKANDRADSRSLMDQGNPFLIRKVLKEDSDTYIACEVDQKEEYOL 120

```

[illegible]

```

DB 1 MNRGVFRRHLIVLQIALIPAAATQGNKVVIGKKGDVVELCTASQKKSIQFHKNSNQIK 60
QY 61 IIGNQGSLFTKGPBKLNDRADSRSLMDQGNFPLIIKNLKIEDSDTYICEVEDQKEEVOL 120
DB 61 IIGNQGSLFTKGPBKLNDRADSRSLMDQGNFPLIIKNLKIEDSDTYICEVEDQKEEVOL 120
QY 121 LVFGLTANSDTHLQGSILTLTLESPGSSPSVQCRSPRGKNIQGGKTLVSQLELDQSG 180
DB 121 LVFGLTANSDTHLQGSILTLTLESPGSSPSVQCRSPRGKNIQGGKTLVSQLELDQSG 180
QY 181 TWCTVLOQKQKVEFKIDIVLAFQKASSIVYKKEGEQVEFSPFLAFYVEKLTGSGELMW 240
DB 181 TWCTVLOQKQKVEFKIDIVLAFQKASSIVYKKEGEQVEFSPFLAFYVEKLTGSGELMW 240
QY 241 QAERASSSKSWITFDLKNKEVSVKRYTODPKLQMGKKLPLHLTLPOLPOYAGSGMLTTLA 300
DB 241 QAERASSSKSWITFDLKNKEVSVKRYTODPKLQMGKKLPLHLTLPOLPOYAGSGMLTTLA 300
QY 301 LEAKTGKLEHQBVLVVMRAATQLOKNLTCEVWGPTSPKMLSLKENKEAKVSRKRPVWV 360
DB 301 LEAKTGKLEHQBVLVVMRAATQLOKNLTCEVWGPTSPKMLSLKENKEAKVSRKRPVWV 360
QY 361 LNPEAGMOCCLSDSGQVLLSNIKYLPTWSTPV 394
DB 361 LNPEAGMOCCLSDSGQVLLSNIKYLPTWSTPV 394

RESULT 10
AAR89458
ID AAR89458 standard; protein; 532 AA.
AC AAR89458;
XX
XX 26-SEP-1996 (first entry)
DE CD4:eta fusion protein.
XX
XX CD7; transmembrane domain; chimeric receptor; CD5; CD34; CH2; CH3; Iqg1;
KM human; CD4; HIV; proteinaceous alpha-helix; T cell; B cell; neutrophil;
KW dendritic cell; therapy; mammal; infection.
XX
XX OS Synthetic.
XX
XX WO9603863-A1.
XX
XX 15-FEB-1996.
PD
XX
XX 26-JUL-1995; 95WO-US009468.
PF
XX
XX 02-AUG-1994; 94US-00284391.
PR 24-FEB-1995; 95US-00394388.
XX
XX (GCHO ) GEN HOSPITAL CORP.
PA
XX
XX Seed B, Banapur B, Romeo C, Kojanus W;
PI
XX
XX WPI; 1996-129034/13.
DR N-PSDB; AAT10803.
XX
XX Membrane-bound chimeric receptor comprising extracellular portion
PT including CD4 fragment - cells expressing receptor can be used for
XX treatment of HIV infection.
XX
XX Example 2; Page 80-81; 134pp; English.
XX
XX AAT10803-T10803 represent membrane bound proteinaceous chimeric receptors
CC of the invention. This sequence represents the CD4:eta chimera. The
CC transmembrane region of the chimeric receptor acts to separate the
CC intracellular and extracellular domains of the chimera, and contains a
CC portion of the CD7 (see AAR89440), CD5 or CD34 transmembrane domains.
CC Alternatively, the extracellular portion of the receptor can be separated
CC from the intracellular domain by the hinge, CH2 and CH3 domains of human

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CC Iqg1 (see AAR89441). The extracellular portion of the chimeric receptor
CC contains a fragment of CD4 (amino acids 1-394 or 1-200 of the CD4
CC sequence, see AAR89450 and AAR89451) which specifically recognises and
CC binds HIV-infected cells, but does not mediate HIV infection. The
CC extracellular domain of the receptor is separated from the cell membrane
CC by 48 or 72 angstroms, or by one or more proteinaceous alpha-helices. The
CC cells expressing the receptor are preferably T cells, B cells,
CC neutrophils, or dendritic cells. The therapeutic cells expressing the
CC chimeric receptor are administered to a mammal to treat HIV infection
XX
XX Sequence 532 AA:
SQ
Query Match 100.0%; Score 2029; DB 2; Length 532;
Best Local Similarity 100.0%; Pred. No. 3-3e-135;
Matches 394; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 MNRGVFRRHLIVLQIALIPAAATQGNKVVIGKKGDVVELCTASQKKSIQFHKNSNQIK 60
DB 1 MNRGVFRRHLIVLQIALIPAAATQGNKVVIGKKGDVVELCTASQKKSIQFHKNSNQIK 60
QY 61 IIGNQGSLFTKGPBKLNDRADSRSLMDQGNFPLIIKNLKIEDSDTYICEVEDQKEEVOL 120
DB 61 IIGNQGSLFTKGPBKLNDRADSRSLMDQGNFPLIIKNLKIEDSDTYICEVEDQKEEVOL 120
QY 121 LVFGLTANSDTHLQGSILTLTLESPGSSPSVQCRSPRGKNIQGGKTLVSQLELDQSG 180
DB 121 LVFGLTANSDTHLQGSILTLTLESPGSSPSVQCRSPRGKNIQGGKTLVSQLELDQSG 180
QY 181 TWCTVLOQKQKVEFKIDIVLAFQKASSIVYKKEGEQVEFSPFLAFYVEKLTGSGELMW 240
DB 181 TWCTVLOQKQKVEFKIDIVLAFQKASSIVYKKEGEQVEFSPFLAFYVEKLTGSGELMW 240
QY 241 QAERASSSKSWITFDLKNKEVSVKRYTODPKLQMGKKLPLHLTLPOLPOYAGSGMLTTLA 300
DB 241 QAERASSSKSWITFDLKNKEVSVKRYTODPKLQMGKKLPLHLTLPOLPOYAGSGMLTTLA 300
QY 301 LEAKTGKLEHQBVLVVMRAATQLOKNLTCEVWGPTSPKMLSLKENKEAKVSRKRPVWV 360
DB 301 LEAKTGKLEHQBVLVVMRAATQLOKNLTCEVWGPTSPKMLSLKENKEAKVSRKRPVWV 360
QY 361 LNPEAGMOCCLSDSGQVLLSNIKYLPTWSTPV 394
DB 361 LNPEAGMOCCLSDSGQVLLSNIKYLPTWSTPV 394

RESULT 11
AAM02215
ID AAM02215 standard; protein; 532 AA.
AC AAM02215;
XX
XX 16-OCT-2003 (revised)
DT 11-NOV-1996 (first entry)
XX
XX CD4:T-cell receptor eta chain chimeric receptor.
DE
XX
XX Chimeric receptor; cellular immunity; adoptive immunotherapy; CD4;
KM human immunodeficiency virus type 1; HIV-1; AIDS; therapy;
KW T-cell receptor eta chain; cytotoxic T lymphocyte; CTL.
XX
XX Homo; sapiens.
OS Mus sp.
OS Chimeric.
XX
XX Key Location/Qualifiers
XX Domain 1..393
XX /label= "CD4 extracellular domain"
XX Region 394..396
XX /label= "linker"
XX /note= "encoding DNA contains a BamHI site used for
XX fusion construction"
XX 397..532
XX Region

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FT      /note="region of fusion derived from eta chain,
FT      preferred signal-transducing portions for constructs of
FT      the invention are amino acids 421-532, 423-455, 438-455,
FT      461-494, 494-528 or 400-420"
FT      400..437
FT      /label= Transmembrane domain
FT      /note="eta chain transmembrane domain"
FT      438..575
FT      /label= Intracellular domain
FT      /note="eta chain intracellular domain"
XX
XX      WO9625953-A1.
XX
XX      29-AUG-1996.
XX
XX      25-JAN-1996; 96WO-US001056.
XX
XX      24-FEB-1995; 95US-00394176.
XX
XX      (GEO) GEN HOSPITAL CORP.
XX
XX      Seed B, Romeo C, Kolanus W;
XX
XX      WPI; 1996-402134/40.
XX      N-PSDB; AAT36760.
XX
XX      direction of cellular immune response using therapeutic cell expressing 2
XX      chimeric receptors - comprising region binding to target cell and region
XX      that signals target cell destruction, or CD28 region, partic. for
XX      eliminating HIV-infected cells.
XX
XX      Claim 7; Page 77-78; 120pp; English.
XX
XX      A chimeric receptor (AAW00215) comprises the extracellular domain of an
XX      engineered form of the CD4 cellular receptor for HIV and the
XX      transmembrane and intracellular regions, including the cytolytic signal-
XX      transducing portion, of the mouse T-cell receptor eta chain. It can be
XX      obtd. by inserting a gene fusion (AAT36760) into a vaccinia virus vector
XX      and expression in host cells. Chimeric receptors comprising CD4 fused to
XX      eta, eta (see also AAW02213) or Fc receptor gamma (see also AAW02214)
XX      chains are capable of directing cytotoxic T lymphocytes to specifically
XX      recognise and kill cells expressing HIV gp120, thus providing a therapy
XX      for AIDS. (Updated on 16-OCT-2003 to standardise OS field)
XX
XX      Sequence 532 AA:
SQ
Query Match 100.0%; Score 2029; DB 2; Length 532;
Best Local Similarity 100.0%; Pred. No. 3.3e-135;
Matches 394; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
1 MNRGVPFRHLIVLQALPAATQGNKVVLGKKGDTVELTCTASQKKSIOFHKNSNOIK 60
DB 1 MNRGVPFRHLIVLQALPAATQGNKVVLGKKGDTVELTCTASQKKSIOFHKNSNOIK 60
QY 1 IIGNQSFLTKGPKSKLNDRAISRSLMDQGNFPLIIKNLKIEDSDTYICEVEDQKEVOI 120
DB 61 IIGNQSFLTKGPKSKLNDRAISRSLMDQGNFPLIIKNLKIEDSDTYICEVEDQKEVOI 120
QY 61 IIGNQSFLTKGPKSKLNDRAISRSLMDQGNFPLIIKNLKIEDSDTYICEVEDQKEVOI 120
DB 61 IIGNQSFLTKGPKSKLNDRAISRSLMDQGNFPLIIKNLKIEDSDTYICEVEDQKEVOI 120
QY 121 LVFGLTANSDTHLLOQOSLTLTLESPGSSPSVQCRSPRGKNIQGGKTLVSQLEIODSG 180
DB 121 LVFGLTANSDTHLLOQOSLTLTLESPGSSPSVQCRSPRGKNIQGGKTLVSQLEIODSG 180
QY 181 TWTCYLVQNOQKVEFKIDIVVLAFOKASSIVYKKEGBOVEFSPPLAFTVYKLGSGELMW 240
DB 181 TWTCYLVQNOQKVEFKIDIVVLAFOKASSIVYKKEGBOVEFSPPLAFTVYKLGSGELMW 240
QY 241 QABRASSSSKSWITFDLKNKEVSVKRYTQDKLQMGKKLPLHLTLPALPOLYAGSGNLTIA 300
DB 241 QABRASSSSKSWITFDLKNKEVSVKRYTQDKLQMGKKLPLHLTLPALPOLYAGSGNLTIA 300
QY 301 LEAKTKLHOEVNLVVMRATQLOKNTLCERWGPSPPLMLSLKENKAVSGREKRVWY 360
DB 301 LEAKTKLHOEVNLVVMRATQLOKNTLCERWGPSPPLMLSLKENKAVSGREKRVWY 360
QY 360 1EAKTKLHOEVNLVVMRATQLOKNTLCERWGPSPPLMLSLKENKAVSGREKRVWY 360
DB 360 1EAKTKLHOEVNLVVMRATQLOKNTLCERWGPSPPLMLSLKENKAVSGREKRVWY 360

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QY      361 LNPEAGMOCILSDSGQVLLSNIKVLPTWSTPV 394
DB      361 LNPEAGMOCILSDSGQVLLSNIKVLPTWSTPV 394
XX
XX      RESULT 12
XX      ID AAW83141 standard; protein; 532 AA.
XX      AAW83141;
XX
XX      03-FEB-1999 (first entry)
XX
XX      Chimeric receptor containing human eta polypeptide.
XX
XX      Human; zeta; eta; gamma; membrane-bound chimeric receptor; infection;
XX      tumour; cancer cell; autoimmune-generated cell; T cell receptor; CD3;
XX      CD4; B cell receptor; Fc receptor; pathogen; bacterial; fungal;
XX      protozoan; viral.
XX
XX      Synthetic.
XX      OS Homo sapiens.
XX      US5843728-A.
XX
XX      01-DEC-1998.
XX
XX      05-APR-1995; 95US-00417495.
XX
XX      07-MAR-1991; 91US-00665961.
XX      06-MAR-1992; 92US-00847566.
XX      28-FEB-1994; 94US-00203866.
XX
XX      (GEO) GEN HOSPITAL CORP.
XX
XX      Romeo C, Kolanus W, Seed B;
XX
XX      WPI; 1999-044582/04.
XX      N-PSDB; AAV70157.
XX
XX      Membrane-bound chimeric receptors - comprising extracellular portion
XX      of which recognises and binds a target cell and an intracellular portion of
XX      e.g. a T-cell receptor.
XX
XX      Claim 11; Col 45-48; 57pp; English.
XX
XX      The present invention describes DNA encoding a membrane-bound chimeric
XX      receptor comprising: (a) an extracellular portion that specifically
XX      recognises and binds a target cell or a target infective agent; and (b)
XX      an intracellular portion of a T-cell receptor CD3, zeta or eta
XX      polypeptide, a B-cell receptor polypeptide or an Fc receptor polypeptide.
XX      The present sequence represents a chimeric receptor containing the human
XX      eta polypeptide. Cells expressing chimeric receptors of the present
XX      invention can be administered to mammals in order to destroy pathogens
XX      (e.g. bacteria, fungi, protozoa or viruses, especially HIV), cancer cells
XX      or autoimmune-generated cells
XX
XX      Sequence 532 AA:
SQ
Query Match 100.0%; Score 2029; DB 2; Length 532;
Best Local Similarity 100.0%; Pred. No. 3.3e-135;
Matches 394; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
1 MNRGVPFRHLIVLQALPAATQGNKVVLGKKGDTVELTCTASQKKSIOFHKNSNOIK 60
DB 1 MNRGVPFRHLIVLQALPAATQGNKVVLGKKGDTVELTCTASQKKSIOFHKNSNOIK 60
QY 1 IIGNQSFLTKGPKSKLNDRAISRSLMDQGNFPLIIKNLKIEDSDTYICEVEDQKEVOI 120
DB 61 IIGNQSFLTKGPKSKLNDRAISRSLMDQGNFPLIIKNLKIEDSDTYICEVEDQKEVOI 120
QY 61 IIGNQSFLTKGPKSKLNDRAISRSLMDQGNFPLIIKNLKIEDSDTYICEVEDQKEVOI 120
DB 61 IIGNQSFLTKGPKSKLNDRAISRSLMDQGNFPLIIKNLKIEDSDTYICEVEDQKEVOI 120
QY 121 LVFGLTANSDTHLLOQOSLTLTLESPGSSPSVQCRSPRGKNIQGGKTLVSQLEIODSG 180
DB 121 LVFGLTANSDTHLLOQOSLTLTLESPGSSPSVQCRSPRGKNIQGGKTLVSQLEIODSG 180

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Db 121 LVFGLTRANSDTHLQGGSLTLTLESPGSSPSVQCRSPRGKNIQGGKTLVSQLELDGSG 180
Qy 181 TWCTVLQONQKVEFKIDIVVLAFOKASSIVYKKEGQVEFSPPLAFTVEKLTGSGELMW 240
Db 181 TWCTVLQONQKVEFKIDIVVLAFOKASSIVYKKEGQVEFSPPLAFTVEKLTGSGELMW 240
Qy 241 QAERASSSKSWITFDLKNKEVSVKRYTODPKLOMGKKLPHLTLPOLPYAGSGNLTLLA 300
Db 241 QAERASSSKSWITFDLKNKEVSVKRYTODPKLOMGKKLPHLTLPOLPYAGSGNLTLLA 300
Qy 301 LEAKTGKLGHOENVLVVVRATQLOKNLTCEVWGPTSPKMLSLKLENKEAVYSRREKPVWV 360
Db 301 LEAKTGKLGHOENVLVVVRATQLOKNLTCEVWGPTSPKMLSLKLENKEAVYSRREKPVWV 360
Qy 361 LNPBAGMOCCLSDSGOVLLESNIKVLPTWSTPV 394
Db 361 LNPBAGMOCCLSDSGOVLLESNIKVLPTWSTPV 394

RESULT 13
AAR27276 standard; protein; 575 AA.
AC AAR27276;
XX
XX 25-MAR-2003 (revised)
DT 28-JUL-1995 (first entry)
XX
XX CD4:zeta peptide chimeric protein.
XX
XX Fusion protein; CD4: extracellular domain; zeta; eta; gamma;
XX membrane spanning domain; intracellular domain; type I;
XX integral membrane homodimer; TCR; T cell antigen receptor;
XX extracellular domain; mouse; human; receptor; chimera;
XX HPB-ALL tumour cell line; natural killer cell.
XX
XX Homo sapiens.
XX
XX
XX Key Location/Qualifiers
XX Protein 1..399
XX /note="CD4 extracellular domain"
XX Protein 400..575
XX /note="zeta membrane spanning and intracellular domain"
XX
XX MO9215322-A1.
XX
XX 17-SEP-1992.
XX
XX 06-MAR-1992; 92MO-US001785.
XX
XX 07-MAR-1991; 91US-0065961.
XX
XX (GEHO) GEN HOSPITAL CORP.
XX
XX Seed B, Romeo C, Kolanus W;
XX
XX WPI; 1992-331474/40.
XX N-PSDB; AAQ28704.
XX
XX Therapeutic cells expressing chimeric receptors - directing cellular
XX response to an infective agent, useful in treating HIV-1, AIDS
XX Pneumocystis carinii infections etc.
XX
XX Example 2; Page 72-73; 114pp; English.
XX
XX This sequence represents a fusion protein between the CD4 extracellular
XX domain and the zeta protein membrane spanning domain and intracellular
XX domain. Zeta is a 32 kD type I integral membrane homodimer which has a 9
XX residue extracellular domain and a 112/113 residue intracellular domain
XX for mouse and human protein respectively. In the production of the CD4
XX receptor chimera, the zeta cDNA was isolated from the HPB-ALL tumour cell
XX line and from human natural killer cells. The zeta cDNA was joined to the

```

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CC extracellular domain of an engineered form of CD4 possessing a BamHI site
CC just upstream of the membrane spanning domain. By a BamHI site naturally
CC present a few residues upstream of the membrane spanning domain. (updated
CC on 25-MAR-2003 to correct PN field.)
XX
XX Sequence 575 AA:
XX
XX Query Match 100.0%; Score 2029; DB 2; Length 575;
XX Best Local Similarity 100.0%; Pred. No. 3 6e-135;
XX Matches 394; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
XX
Qy 1 MNRGVFPRHLVLVQLALPAATQGNKRVYLGKKGDVLELTCTASQKKSIGFHWKNSNQIK 60
Db 1 MNRGVFPRHLVLVQLALPAATQGNKRVYLGKKGDVLELTCTASQKKSIGFHWKNSNQIK 60
Qy 61 ILGNQGSFLLTKGSKANDRADSRSLMDQGNFPLIKNLKIEDSDTYICVEEDQKEVOL 120
Db 61 ILGNQGSFLLTKGSKANDRADSRSLMDQGNFPLIKNLKIEDSDTYICVEEDQKEVOL 120
Qy 121 LVFGLTRANSDTHLQGGSLTLTLESPGSSPSVQCRSPRGKNIQGGKTLVSQLELDGSG 180
Db 121 LVFGLTRANSDTHLQGGSLTLTLESPGSSPSVQCRSPRGKNIQGGKTLVSQLELDGSG 180
Qy 181 TWCTVLQONQKVEFKIDIVVLAFOKASSIVYKKEGQVEFSPPLAFTVEKLTGSGELMW 240
Db 181 TWCTVLQONQKVEFKIDIVVLAFOKASSIVYKKEGQVEFSPPLAFTVEKLTGSGELMW 240
Qy 241 QAERASSSKSWITFDLKNKEVSVKRYTODPKLOMGKKLPHLTLPOLPYAGSGNLTLLA 300
Db 241 QAERASSSKSWITFDLKNKEVSVKRYTODPKLOMGKKLPHLTLPOLPYAGSGNLTLLA 300
Qy 301 LEAKTGKLGHOENVLVVVRATQLOKNLTCEVWGPTSPKMLSLKLENKEAVYSRREKPVWV 360
Db 301 LEAKTGKLGHOENVLVVVRATQLOKNLTCEVWGPTSPKMLSLKLENKEAVYSRREKPVWV 360
Qy 361 LNPBAGMOCCLSDSGOVLLESNIKVLPTWSTPV 394
Db 361 LNPBAGMOCCLSDSGOVLLESNIKVLPTWSTPV 394

RESULT 14
AAR78676
ID AAR78676 standard; protein; 575 AA.
XX
XX AAR78676;
XX
XX 16-APR-1996 (first entry)
XX
XX T-cell receptor zeta.
XX
XX Chimeric receptor; CD4; T-cell receptor zeta; HIV; cytotoxicity;
XX human immunodeficiency virus; adoptive immunotherapy.
XX
XX Homo sapiens.
XX
XX MO9521528-A1.
XX
XX 17-AUG-1995.
XX
XX 12-JAN-1995; 95MO-US000454.
XX
XX 14-FEB-1994; 94US-00195395.
XX 02-AUG-1994; 94US-00284391.
XX
XX (GEHO) GEN HOSPITAL CORP.
XX
XX Seed B, Banapur B, Romeo C, Kolanus W;
XX
XX WPI; 1995-292893/38.
XX N-PSDB; AAQ96122.
XX
XX Target cytotoxicity of HIV-infected cells - by chimeric CD4 receptor-bearing
XX cells.

```

XX Example 2; Page 76-77; 118pp; English.

PS Fusion proteins comprising the extracellular domain of CD4 fused to T-

XX cell receptor zeta, gamma or eta (AAR78676-78, respectively) were

CC expressed in CV1 using a vaccine virus vector. These CD4:zeta, CD4:gamma

CC and CD4:eta chimeric receptors mediated cytolysis of targets expressing

CC HIV gp120/41

XX

Sequence 575 AA;

Query Match 100.0%; Score 2029; DB 2; Length 575;

Best Local Similarity 100.0%; Pred. No. 3.6e-135;

Matches 394; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MNRGVPFRHLVLTALPAPATQGNKVLGKGDVETCTASQKSIQFHWKNSNOIK 60

DB 1 MNRGVPFRHLVLTALPAPATQGNKVLGKGDVETCTASQKSIQFHWKNSNOIK 60

QY 61 ILGNQGSFLTKGPKSLNDRADSRSLMDQGNFPLIINKLIEDSDTYICEVEDQKEEVOL 120

DB 61 ILGNQGSFLTKGPKSLNDRADSRSLMDQGNFPLIINKLIEDSDTYICEVEDQKEEVOL 120

QY 121 LVFGLTANSPTHLLOGOSITLTLESPPGSSPSVQCRSPRGKNIQGGKTLVSQLELQDSG 180

DB 121 LVFGLTANSPTHLLOGOSITLTLESPPGSSPSVQCRSPRGKNIQGGKTLVSQLELQDSG 180

QY 181 TWCTVLOQOKKVEFKIDIVLAFQKASSIVYKKGEOVFSPPLAFVETKLTSGSELW 240

DB 181 TWCTVLOQOKKVEFKIDIVLAFQKASSIVYKKGEOVFSPPLAFVETKLTSGSELW 240

QY 241 QAERASSSKSWITFDLKNKEVSVKRVTPQDKLQWKKLPLHLTLPQALPOYAGSGNLTLA 300

DB 241 QAERASSSKSWITFDLKNKEVSVKRVTPQDKLQWKKLPLHLTLPQALPOYAGSGNLTLA 300

QY 301 LEAKTGKHOEVNLVVMRATOLQKNLTCEVWGPTSPKMLSLKLENKAKVSKREKPVWV 360

DB 301 LEAKTGKHOEVNLVVMRATOLQKNLTCEVWGPTSPKMLSLKLENKAKVSKREKPVWV 360

QY 361 INPEAGMOCILSDSGOVLLESNIKVLPTWSTPV 394

DB 361 INPEAGMOCILSDSGOVLLESNIKVLPTWSTPV 394

RESULT 15

AAR89456

ID AAR89456 standard; protein; 575 AA.

XX AAR89456;

AC AAR89456;

XX 26-SEP-1996 (first entry)

DT

XX CD4:zeta fusion protein.

DE

XX CD7; transmembrane domain; chimeric receptor; CD5; CD34; CH2; CH3; IgG1;

KW human; CD4; HIV; proteinaceous alpha-helix; T cell; B cell; neutrophil;

KW dendritic cell; therapy; mammal; infection.

XX Synthetic.

OS

XX

PN WO9603883-A1.

PD 15-FEB-1996.

XX

PF 26-JUL-1995; 95WO-US009468.

XX

PR 02-AUG-1994; 94US-00284391.

PR 24-FEB-1995; 95US-00394388.

XX

PA (GENO) GEN HOSPITAL CORP.

PI Seed B, Banapur B, Romeo C, Kolanus W.

XX

DR WPI: 1996-129034/13.

DR N-PSDB; AAT10801.

XX

PT Membrane-bound chimeric receptor comprising extracellular portion

PT including CD4 fragment - cells expressing receptor can be used for

PT treatment of HIV infection.

XX

PS Example 2; Page 77-78; 134pp; English.

XX

CC AAT10801-T10803 represent membrane bound proteinaceous chimeric receptors

CC of the invention. This sequence represents the CD4:zeta chimera. The

CC transmembrane region of the chimeric receptor acts to separate the

CC intracellular and extracellular domains of the chimera, and contains a

CC portion of the CD7 (see AAR89440), CD5 or CD34 transmembrane domain.

CC Alternatively, the extracellular portion of the receptor can be separated

CC from the intracellular domain by the hinge, CH2 and CH3 domains of human

CC IgG1 (see AAR89441). The extracellular portion of the chimeric receptor

CC contains a fragment of CD4 (amino acids 1-394 or 1-200 of the CD4

CC sequence, see AAR89450 and AAR89451) which specifically recognizes and

CC binds HIV-infected cells, but does not mediate HIV infection. The

CC extracellular domain of the receptor is separated from the cell membrane

CC by 48 or 72 angstroms, or by one or more proteinaceous alpha-helices. The

CC cells expressing the receptor are preferably T cells, B cells,

CC neutrophils, or dendritic cells. The therapeutic cells expressing the

CC chimeric receptor are administered to a mammal to treat HIV infection

XX

Sequence 575 AA;

Query Match 100.0%; Score 2029; DB 2; Length 575;

Best Local Similarity 100.0%; Pred. No. 3.6e-135;

Matches 394; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MNRGVPFRHLVLTALPAPATQGNKVLGKGDVETCTASQKSIQFHWKNSNOIK 60

DB 1 MNRGVPFRHLVLTALPAPATQGNKVLGKGDVETCTASQKSIQFHWKNSNOIK 60

QY 61 ILGNQGSFLTKGPKSLNDRADSRSLMDQGNFPLIINKLIEDSDTYICEVEDQKEEVOL 120

DB 61 ILGNQGSFLTKGPKSLNDRADSRSLMDQGNFPLIINKLIEDSDTYICEVEDQKEEVOL 120

QY 121 LVFGLTANSPTHLLOGOSITLTLESPPGSSPSVQCRSPRGKNIQGGKTLVSQLELQDSG 180

DB 121 LVFGLTANSPTHLLOGOSITLTLESPPGSSPSVQCRSPRGKNIQGGKTLVSQLELQDSG 180

QY 181 TWCTVLOQOKKVEFKIDIVLAFQKASSIVYKKGEOVFSPPLAFVETKLTSGSELW 240

DB 181 TWCTVLOQOKKVEFKIDIVLAFQKASSIVYKKGEOVFSPPLAFVETKLTSGSELW 240

QY 241 QAERASSSKSWITFDLKNKEVSVKRVTPQDKLQWKKLPLHLTLPQALPOYAGSGNLTLA 300

DB 241 QAERASSSKSWITFDLKNKEVSVKRVTPQDKLQWKKLPLHLTLPQALPOYAGSGNLTLA 300

QY 301 LEAKTGKHOEVNLVVMRATOLQKNLTCEVWGPTSPKMLSLKLENKAKVSKREKPVWV 360

DB 301 LEAKTGKHOEVNLVVMRATOLQKNLTCEVWGPTSPKMLSLKLENKAKVSKREKPVWV 360

QY 361 INPEAGMOCILSDSGOVLLESNIKVLPTWSTPV 394

DB 361 INPEAGMOCILSDSGOVLLESNIKVLPTWSTPV 394

Search completed: March 7, 2005, 07:12:58

Job time : 167.813 secs